

Solar and Heliospheric MOWG findings, 2010 January

- 1. *The Heliophysics Guest Investigator Program.*** We find that the cancellation of the HGI program for 2010 in the first year of the SDO mission and close to RBSP launch will have a seriously adverse impact on LWS science. The LWS TR&T program is in an excellent position to mediate this gap by supporting research pertinent to SDO and RBSP.
- 2. *Recruiting New Solar and Heliospheric Faculty.*** The future of solar and heliospheric (S&H) physics at NASA, and in the United States as a whole, depends on having vibrant college and university graduate degree programs to train future generations of S&H physicists. Given that much research in this field is currently conducted in industrial and government laboratory settings, we find there is an increasing need to promote the growth of S&H research groups at degree-granting institutions. To that end, we believe NASA should consider investing in a program that partially or fully funds the recruitment and placement of young faculty members into tenure-track positions at American colleges and universities (such as a similar program in place at the NSF). While we recognize that this is a time of strained financial resources, reducing the institutional cost associated with the first few years of a new junior-faculty appointment (for example) may be enough for universities to choose to start a S&H research program over a program in another, non-leveraged line of research. Such junior faculty appointments, and the students that emerge from their research programs, would thereby sustain S&H research for years to come.
- 3. *Duration of Research Grants Awards.*** Given that considerable investments of time and resources are required to write and review proposals, including the time of Headquarters personnel, we find that science productivity would be enhanced if all of the R&A program elements included awards of up to 4 years, including TR&T and GI. Of course the quantity of proposed work must be commensurate with the award duration, as has always been the case. As stated in past and present NRAs, cost realism and reasonableness are important criteria for evaluating proposals. The following excerpt from ROSES 2009 is clear: “Any proposed period of performance must be justified in the proposal. The appropriateness of the proposed period of performance will be evaluated by peer review. NASA may select proposals for a shorter award duration than proposed.” We recommend modifying the additional wording in Appendix B.2: “Typical duration of awards for SHP program is 3 years. Duration of proposed work up to four years can be requested for SR&T proposals. However, a strong justification must be provided to support the extension of funding

into the fourth year.” We are concerned that this may be taken to mean that the quality and importance of the proposed work must reach a higher standard, not simply that the quantity must justify 4 years.

4. Solar-C. The MOWG strongly recommends that NASA form a Solar-C Science Working Group as expeditiously as possible. The SH MOWG recommends that the initial charges to this working group would be: (1) evaluate the science plans being studied for Solar-C by the Japanese and their international science working group in terms of how well the proposed Solar-C science fits within and supports the NASA Heliophysics Roadmap and NASA Strategic Plan, and (2) determine the interest of the US heliophysics community in collaborating in a Solar-C mission.

5. *Heliophysics Decadal Survey.* Consideration of solar physics in the current Astronomy and Astrophysics Decadal Survey was limited to groundbased astronomy. While the MOWG realizes that NASA cannot dictate the results of the upcoming Heliophysics decadal survey, we find that neither should NASA *a priori* exclude observing venues for accomplishing the next decade’s scientific goals. Similarly, we recognize the benefit to Heliophysics science of the multiple program lines (Explorer, STP, and LWS, as well as LCAS and R&A programs) under which NASA implements that science. We hope that the Heliophysics Division is able to make clear, in any presentation to the Decadal survey panel or its subpanels, the role that each program plays.

6. *Concerns with New Orbit Conjunction Analysis.* The new requirement for NASA science divisions to fund additional, detailed orbit conjunction (collision / debris) analysis for their spacecraft is a concern to the space science community.

1) It’s already being done. The Air Force’s North American Aerospace Defense Command (NORAD), located at Cheyenne Mountain, and NASA’s Orbital Debris Program, located at the Johnson Space Center and Goddard Space Flight Center, are already doing excellent jobs in tracking and analyzing spacecraft and orbital debris, and it is perceived that they already have a robust program that far exceeds anything that NASA is currently planning for additional conjunction analysis. It is not clear how these additional conjunction analyses by NASA would add much value beyond the already available information on spacecraft and debris tracking provided from NORAD and NASA’s Orbital Debris Program.

- 2) **Not all spacecraft require it.** Many of NASA's spacecraft do not have propulsion systems on-board and thus have no capability to avoid collisions even if collisions are predicted. The NASA Procedural Requirements for Limiting Orbital Debris (NPR-8715.6A, 2008) only requires conjunction analysis for maneuverable Earth-orbiting spacecraft, but it is perceived that the additional conjunction analysis is intended for all spacecraft, or at least is an unfair tax on all spacecraft.
- 3) **It's reducing funds for science missions.** The new plans for NASA's orbit conjunction analyses in 2010 (and potentially applied into the distant future) have already caused significant reductions of funding for NASA's operating missions (more than \$2M in FY10), and there is concern that these early plans for additional conjunction analyses may be underestimated and thus could cause even larger funding impact on NASA's science missions.

NASA might want to consider reducing the scope, and thus cost, for these additional orbit conjunction analyses to just the high value and maneuverable satellites. Additionally, NASA could consider stronger collaboration with NORAD to help reduce NASA's costs for their conjunction analysis.